# KENTS LAKE

## Introduction

Kents Lake is high in the Tusher Mountains east of Beaver. It is a small reservoir in a high meadow. There are two other lakes in the immediate vicinity: Upper Kents Lake and Lower Kents Lake. Both are considerably smaller and shallower than Kents Lake itself. Kents Lake should not be confused with Kens Lake near Moab.

**Characteristics and Morphometry**

| | |
|---|---|
| Lake elevation (meters / feet) | 2,680 / 8,790 |
| Surface area (hectares / acres) | 19.4 / 48 |
| Watershed area (hectares / acres) | |
| Volume ($m^3$ / acre-feet) | |
| capacity | 1,200,000 / 975 |
| conservation pool | 370,000 / 300 |
| Annual inflow ($m^3$ / acre-feet) | |
| Retention time (years) | |
| Drawdown ($m^3$ / acre-feet) | 833,000 / 675 |
| Depth (meters / feet) | |
| maximum | 9.1 / 30 |
| mean | 6.2 / 20.3 |
| Length (meters / feet) | 460 / 1,500 |
| Width (meters / feet) | 340 / 1,125 |
| Shoreline (meters / feet) | 1,300 / 4,300 |

The reservoir was created in 1928 by the construction of an earth-fill dam. The reservoir shoreline is owned and administered by the Fish Lake National Forest with unrestricted public access. Water is consumed for agricultureal purposes, recreation, and cold water habitat. No changes in water use are forseen.

**Location**

| | |
|---|---|
| County | Beaver |
| Longitude / Latitude | 112 27 09 / 38 14 00 |
| USGS Map | Circleville Mountain, Utah, 1971 |
| DeLorme's Atlas & Gazeteer™ | Page 26, B-2 |
| Cataloging Unit | Beaver River (16030007) |

## Recreation

Kents Lake is accessible from FS-137, a gravel road across the north slope of Circleville Mountain also passing by Anderson Meadow Reservoir and LaBaron Lake. FS-137 both originates and terminates at intersections with U-

153, the road from Beaver to Junction.

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**Limnological Data**

Data sampled from STORET site: 594118

| **Surface Data** | 1992 |
|---|---|
| Trophic Status | H |
| Chlorophyll TSI | 75.92 |
| Secchi Depth TSI | 60.00 |
| Phosphorous TSI | 71.26 |
| Average TSI | 69.06 |
| Chlorophyll a (ug/L) | 101 |
| Transparency (m) | 1.0 |
| Total Phosphorous (mg/L) | 105 |
| pH | 8.9 |
| Total Susp. Solids (mg/L) | 8.3 |
| Total Volatile Solids (mg/L) | 6 |
| Total Residual Solids (mg/L) | 3 |
| Temperature (°C / °f) | 15/59 |
| Conductivity (umhos.cm) | 52 |
| | |
| **Water Column Data** | |
| Ammonia (mg/L) | 0.03 |
| Nitrate/Nitrite (mg/L) | 0.01 |
| Hardness (mg/L) | 22.1 |
| Alkalinity (mg/L) | 26 |
| Silica (mg/L) | 25.0 |
| Total Phosphorus (ug/L) | 127.5 |
| | |
| **Miscellaneous Data** | |
| Limiting Nutrient | N |
| DO (Mg/l) at 75% depth | 5.4 |
| Stratification (m) | 3 |
| Depth at Deepest Site (m) | 4.8 |

1994 profile data is for June 17, 1992.

From the west, exit I-15 at Beaver and travel up Beaver Canyon on U-153 for about 10 miles to the FS-137 turnoff, at Little Cottonwood Campground. Travel on FS-137 for another 3 miles to Kents Lake. From the east, travel up U-153 (this segment is unpaved) from US-89 at Junction for 12 miles to FS-173, and go 10 miles on FS-173 to Kents Lake. It may be better, though longer, to stay on U-153 until the 2nd junction with FS-173 in Beaver Canyon, then backtrack on FS-173 to Kents Lake. During the late summer of 1994 the Utah National Guard performed road maintenance in the area and the adjacent campground.

Fishing, boating, and camping are possible in the area. Usage is heavy. There is an unimproved boat launching site.

Kents Lake Campground, maintained by the Foerst Service, is adjacent to the reservoir and offers camping at a nonimal charge. It is located in an aspen forest and has 17 campsites, drinking water and vault toilets. There are also several private campgrounds in Beaver.

## Watershed Description

The reservoir is in the Tushar Range, on a high bench below Birch Creek Mountain and overlooking the Beaver River Canyon. It has a small, natural watershed including Upper Kent's Lake and several springs. Most of the inflow, however, comes from a diversion of the south fork of the Beaver River. This diverted watershed includes a portion of Circleville Mountain with thick forests and rocky cirques. The area around the reservoir includes meadows, to the north and east, and a steep slope to the south.

The watershed high point, Circleville Mountain, is 3,362m (11,031 ft) above sea level, thereby developing a complex slope of 13.1% to the reservoir. The inflow is a canal from the South Fork of the Beaver River, 0.5 miles below Anderson Meadows Reservoir and from springs near Upper Kent's Lake. The overall stream gradient, including the canal, is 5.3% (280 feet per mile). The final segment from the canal to the lake has a gradient of 7.0% (371 feet per mile).

The watershed is composed of high mountains and mountain valleys. The soil is largely of volcanic origin with moderate permeability and moderately slow erosion and runoff. Soil associations are listed in Appendix III.

The vegetation communities are comprised of pine, aspen, spruce-fir, oak and maple. The watershed receives 64 - 72 cm (25 - 30 inches) of precipitation annually with a frost-free season of 40 - 60 days at the reservoir.

Land use is 100% multiple use land in the Fishlake National Forest.

## Limnological Assessment

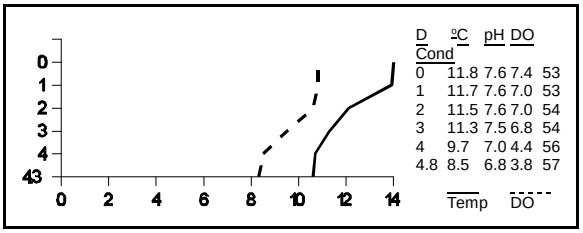
The water quality of Kents Lake is fair. It is considered to be very soft with a hardness concentration range from 22 mg/L (CaCO3). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus and dissolved oxygen. The average concentration of total phosphorus in the water column in 1992 was 127.5 ug/L which is over five times the recommended pollution indicator for phosphorus of 25 ug/L. Dissolved oxygen concentrations in late summer substantiate the fact that water quality impairments do exist. Even with a maximum depth of only 4.8 meters as depicted in the June 17, 1992 profile there is a decline in the dissolved oxygen concentration at the bottom of the reservoir to 3.8 mg/L. Later in August the concentration at the bottom fell to 0.2 mg/L. These types of conditions indicate that there may be serious problems with overwintering of fish and the loss of fishery habitat due to low dissolved oxygen concentrations. The 1992 data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is hypereutrophic. It is apparent that a lot of data has not yet been obtained to determine the exact limnological conditions for the reservoir and that additional data will need to be collect to enhance our understanding of water quality. It is obvious that serious water quality

**Information**

| | |
|---|---|
| **Management Agencies** | |
| Fish Lake National Forest | 896-9233 |
| Beaver Ranger District | 438-2436 |
| Five County Association of Governments | 673-3548 |
| Division of Wildlife Resources | 538-4700 |
| Division of Water Quality | 538-6146 |
| **Recreation** | |
| Color Country Travel Region (St. George) | 628-4171 |
| Beaver Chamber of Commerce | 438-2975 |
| Beaver KOA | 438-2924 |
| **Lake Administrator** | |
| Kents Lake Irrigation Company | 438-2275 |

impairments could exist if water quality trends identified continue to exist.

The DWR typically stocks the reservoir with 2,000 fingerling brook trout (*Salvelinus fontinalis*) and 4,000 catchable rainbow trout (*Oncorhynchus mykiss*).




Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

| Species | Cell Volume ($mm^3$/liter) | % Density By Volume |
|---|---|---|
| *Aphanizomenon flos-aquae* | 85. 3 5 7 | 99.99 |
| *Ankistrodesmus falcatus* | 0.004 | 0.01 |
| Total | 85.361 | |
| Shannon-Weaver [H'] | 0.00 | |
| Species Evenness | 0.00 | |
| Species Richness | 0.07 | |

This is not typical of most high mountain reservoirs and indicates eutrophication problems. The phytoplankton commnunity is dominated by blue-green algae which are not indicative of high water quality.

**Pollution Assessment**

Nonpoint pollution sources are: livestock grazing in the vicinity of the reservoir and throughout the watershed and from recreation.

There are no point pollution sources in the watershed.

**Beneficial Use Classification**

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).